

SPONTANEOUS CURE OF A POPLITEAL ANEURYSM OF SYPHILITIC AETIOLOGY*

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The two principal causes of aneurysm of the arteries in human beings are arteriosclerosis and syphilis. Arteriosclerotic aneurysms usually develop after the age of 60, while syphilitic aneurysms develop earlier between the third and the fifth decade of life. The common sites of the former are the abdominal aorta and the popliteal artery, while in 70 to 85 per cent. of cases, the sites of involvement of syphilitic aneurysms are the thoracic aorta and its principal branches. Complete rupture is less frequent in arteriosclerotic aneurysms than in syphilitic aneurysms. Mural thrombosis occurs in both types, but complete thrombosis is often associated with the arteriosclerotic type. There is little information in the literature on the incidence of syphilitic aneurysms involving the peripheral vasculature. Stokes, Beerman, and Ingraham (1944) stated that syphilis of the arteries of the extremities was comparatively uncommon, and Allen, Barker, and Hines (1955) specifically stated that syphilis as a cause of aneurysm in the lower extremities was rare. Gifford, Hines, and Janes (1953), in a follow-up study of 100 popliteal aneurysms from 1913 to 1951, reported that the diagnosis of syphilis as the cause of aneurysm was made only in three patients (aged 37, 54, and 57 years) and that two others (aged 37 and 76) had a positive serological test for syphilis besides clinical evidence of occlusive arterial disease presumably arteriosclerotic in nature.

An attempt has been made to obtain some figures on aneurysms from the surgical records of the Government General Hospital, Madras, for the 10-year period 1947-1956. The total number of aneurysms dealt with on the surgical side was 86 (thirty abdominal, 34 thoracic, and 22 peripheral). Traumatic, mycotic, arterio-venous, cirroid, and intracranial aneurysms were excluded. Among the 22 aneurysms affecting the peripheral arteries, there

were seven of the popliteal artery, and five of these were of syphilitic aetiology with no evidence of atherosclerosis. They were all males and their ages ranged from 29 to 60 years (average 39). Our records of aneurysms of the popliteal artery of luetic aetiology run counter to the reports of Western and American observers, and it seems, although exact figures are unavailable, that in the tropics, a greater number of arterial aneurysms of all types are due to syphilis because of the large reservoir of undiscovered and untreated syphilis in the population. Furthermore, fewer persons live long enough to develop atherosclerosis, which is therefore of less significance in the causation of arterial disease than in Europe and America.

Diagnosis

Aneurysms of the popliteal artery are easily observed, because of the superficial location and because the pulsating mass in the popliteal space can be felt with the thumb and forefinger placed on each side of the swelling. A systolic bruit is frequently heard with the stethoscope. Radiography may reveal marginal calcification in the arteriosclerotic type of aneurysm but rarely in the syphilitic type. Arteriography is rarely indicated in diagnosis, and pulsating neoplasms in the popliteal space are very rare. In doubtful cases, however, the diagnosis may be confirmed by an arteriogram, which may also demonstrate the establishment of adequate collateral circulation.

Symptoms and Complications

Gifford and others (1953) reported that 35 of the 100 aneurysms in their study were asymptomatic when first diagnosed, but that symptoms and complications soon set in. Hence popliteal aneurysm has been rightly considered as a "dangerous disease

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which constantly threatens the life of the limb which harbours it." Symptoms directly attributable to the aneurysm include the following:

- (1) Pain in the popliteal space.
- (2) Intermittent claudication, or ischaemic neuritis, or both, in the leg beyond the aneurysm.
- (3) Gangrene or ischaemic ulcers secondary to thrombosis within the aneurysm or embolism distal to the aneurysm from a mural thrombosis.
- (4) Pressure on the veins or nerves in the popliteal space.
- (5) Rupture or leaking from the aneurysm.
- (6) Limitation of movement of the knee.

Prognosis

The prognosis of a popliteal aneurysm, irrespective of its aetiology, is always most grave, particularly when a complication other than thrombosis has occurred. In the arteriosclerotic type, the danger is much greater, because of the age of the patient, the widespread nature of the sclerotic process in the blood vessels (particularly of the heart and brain), and the co-existence of other non-vascular diseases such as diabetes. Surgical intervention before serious complications have set in, offers the best chance of saving the limb.

According to Gifford and others (1953), a spontaneous "cure", caused by complete occlusion of the popliteal aneurysm by a thrombosis, appears to be neither safe nor complete. Of 24 aneurysms occluded by a thrombosis, eight (33 per cent.) led to amputation of the limb within 3 months of the occlusive episode, and only four limbs which survived 3 months or more after thrombosis and escaped amputation, were symptomless, useful extremities. The other twelve patients suffered from troublesome intermittent claudication or ischaemic neuritis. These authors thought it debatable whether there was anything to gain by operating on a popliteal aneurysm which had been completely occluded by a thrombosis, with no further complication. The prognosis of a syphilitic popliteal aneurysm occluded by a thrombosis may be better than that of an arteriosclerotic aneurysm in the same circumstances, in the absence of any collateral syphilitic involvement of the heart and aorta. The comparative youth of the patient and the probability that healthy blood vessels will be capable of taking on the circulatory load, and the beneficial effect of specific treatment with penicillin and iodides) may lead to a spontaneous cure with a functioning limb.

Case Report

A young married male, aged 28 years, a small shopkeeper, was referred to the Institute of Venereology on February

3, 1958. His chief complaint was the development 6 weeks earlier of a swelling on the back of the left knee; this was associated with pricking sensation in the toes of the left foot and painless periodical swelling of the foot. Walking more than about 50 yards brought on severe pain at the back of the left leg, relieved by rest.

History.—He had had an inguinal bubo after sexual exposure 6 years previously for which he had received four intramuscular injections from a private practitioner. There was no history of any genital sore or rash on the body.

Examination.—He was fairly well-nourished but slightly anaemic looking. There was no genital scar, sore, or urethral discharge. The inguinal and epitrochlear lymph nodes were just palpable, discrete, movable, and non-tender. A pulsatile slightly ovoid swelling about 3" in diameter was observed in the left popliteal region and palpation revealed the expansile character of the mass, synchronous with the apex beat. Pulsation could not be felt over the posterior tibial and dorsalis pedis arteries of the same side. There were no other abnormal findings.

Laboratory Investigations.—Blood pressure in the arm. 115/80; red blood count. 2.6 millions per c.mm., haemoglobin .60 per cent., total leucocyte count .6,400 c.mm., differential leucocyte count . polymorphs—64 per cent.; lymphocytes—25 per cent.; eosinophils—8 per cent.; M—3 per cent.; erythrocyte sedimentation rate. 64 mm./hr (Westergren); VDRL test for Syphilis . positive 64 dil.; urine analysis within normal limits; Frei intracutaneous test for lymphogranuloma venereum—negative; skiagram of heart and aorta—aortic knob prominent; plain skiagram of left knee, no shadow or calcification; cerebrospinal fluid normal.

The patient's wife and only child were examined for syphilis with negative findings.

Treatment.—On the basis of a diagnosis of popliteal aneurysm of syphilitic aetiology, the patient received a course of PAM in oil at the rate of 600,000 units intramuscularly daily for 10 days. While he was receiving treatment, he was referred to a surgical colleague, who confirmed the diagnosis and advised early surgical treatment.

Progress.—While arrangements were being made for the operation, the patient went home for a few days from February 19 to 23, to get over the post-lumbar-puncture headache. When he returned the pulsatile swelling in the popliteal region had disappeared, the limb presented a normal appearance, and the pulsation of the left dorsalis pedis and post-tibial arteries could not be felt. An arteriogram in the antero-posterior position revealed a gap in the line of the popliteal artery with evidence of adequate collateral circulation (Figure, opposite) and it was inferred that complete occlusion of the aneurysm by a thrombus had caused a spontaneous cure.

The patient was kept in hospital for 4 weeks and received a second course of PAM (6 mega units), and was discharged on March 26, 1958, with instructions to report periodically. On May 20, 1958, he had no complaint and was able to walk about one mile daily without pain. The

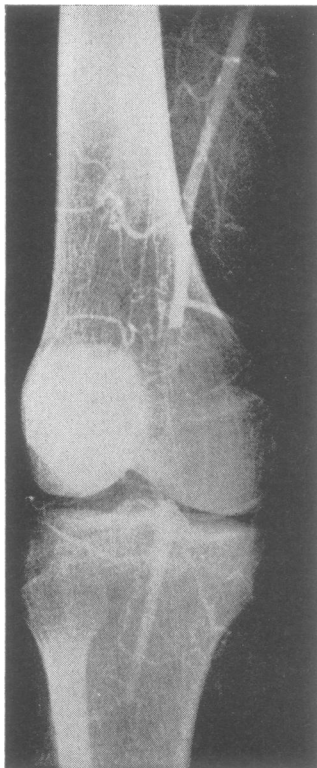


FIGURE.—Arteriogram of left popliteal aneurysm showing complete occlusion of the artery by a thrombus.

left leg was normal in appearance, and the surface temperature of both legs was the same. Pulsation of the left dorsalis pedis artery was just appreciable, but that of the left post-tibial artery could not be felt. The positive VDRL titre had fallen from 64 to 16, and the erythrocyte sedimentation rate was within normal limits (12 mm./hr).

Discussion

This history of a painless inguinal adenitis, without a genital sore or cutaneous rash, after a venereal exposure 6 years before, and the response of the condition to four intramuscular injections (probably penicillin) is suggestive of what Stokes and others

(1944) called "*syphilis d'emblée*" of the lymphogenous type with no visible or recognizable primary lesion. The negative Frei intracutaneous test for lymphogranuloma venereum, the persistence of palpable lymph nodes of the groin and epitrochlear regions, and the high titre serological reaction to the VDRL test, 6 years after the initial infection confirm the diagnosis of inadequately treated syphilis. The occurrence of a rapidly growing popliteal aneurysm only 6 years after the initial infection in the youngest patient on record is a noteworthy feature. Apart from the positive blood test for syphilis, a raised erythrocyte sedimentation rate in cardiovascular syphilis is stated to have both a diagnostic and prognostic value (Leonard and Smith, 1957). In the present case, the reagin titre of the serum fell from 64 to 16 dilutions, and the erythrocyte sedimentation rate fell from 64 to 12 mm./hr. after treatment with penicillin. A spontaneous cure caused by occlusion of the aneurysm by a thrombus had occurred within 5 days of completing the course of penicillin. We have found no other record of such a cure with or without treatment. Gifford and others (1953), in their series of 100 popliteal aneurysms, recorded that 24 were occluded by a thrombus, but did not state whether any of them were syphilitic.

Summary

The spontaneous cure of a popliteal aneurysm of luetic aetiology in a young man is reported.

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